

IN THE CLAIMS:

Rewrite the pending claims and add new claims as follows:

1-7. (Withdrawn)

8. (Currently Amended) A method for use in using cantilever-based instruments, comprising:

~~applying measuring a drag force to acting on a cantilever without a tip of the cantilever contacting a surface; by monitoring a deflection of the cantilever; measuring motion of a base of the cantilever; and determining characteristics of the cantilever based on the motion of the base and the cantilever deflection.~~

9. (Currently Amended) The method as claimed in claim 8, ~~wherein the including~~ applying the drag force ~~includes by~~ directing a fluid flow over the cantilever; and the determining characteristics includes determining a fluid flow rate of the fluid flow.

10. (Previously Presented) The method as claimed in claim 9, wherein the determining the fluid flow rate includes determining the fluid flow rate based at least in part on a spring constant and dampening constant of the cantilever.

11. (Currently Amended) The method as claimed in claim 10, wherein ~~prior to the directing the fluid flow, the~~ applying the drag force includes oscillating the cantilever; the monitoring the deflection includes monitoring the deflection of the cantilever while oscillating; the determining characteristics includes determining a ~~hysteresis of power spectrum of the cantilever based on~~ the deflection of the cantilever ~~while oscillating and determining the spring constant based at least in part on the power spectrum as a function of position of the base of the cantilever.~~

12. (Previously Presented) The method as claimed in claim 8, wherein the monitoring the deflection includes determining a hysteretic of deflection of the cantilever and monitoring the hysteresis; and

the determining characteristics includes determining a distance between the cantilever tip and the surface.

13. (Currently Amended) The method as claimed in claim 8, wherein the applying the drag force includes oscillating the cantilever;

the monitoring the deflection includes monitoring the deflection of the cantilever while oscillating the cantilever; and

the determining characteristics includes determining ~~a power spectrum of the cantilever based on the deflection of the cantilever while oscillating and determining a spring constant based at least in part on the a power spectrum associated with the cantilever.~~

14. (Currently Amended) The method as claimed in claim 13, wherein the monitoring the deflection further includes determining a hysteresis of deflection of the cantilever and monitoring the hysteresis; and

the determining characteristics includes determining a distance between the cantilever tip and the surface based at least in part on the hysteresis.

15. (Currently Amended) An apparatus for determining cantilever parameters, comprising:

means for measuring applying a drag force acting on a cantilever, including means for
~~means for~~ optically monitoring a deflection of the cantilever;

means for measuring motion of a base of the cantilever; and

means for determining characteristics of the cantilever based on the motion of the base and the cantilever deflection.

16. (Currently Amended) The apparatus ~~as claimed in of~~ claim 15, ~~wherein the means for applying the drag force includes~~ including means for directing a fluid flow over the cantilever; and

wherein the means for determining characteristics includes means for determining computing configured to calculate a fluid flow rate of the fluid flow.

17. (Canceled)

18. (Currently Amended) The apparatus ~~as claimed in of~~ claim 15, ~~wherein the means for applying the drag force includes~~ a including means for oscillating the cantilever;

wherein:

the means for ~~optically~~ monitoring the deflection is configured to monitor the deflection of the cantilever while oscillating; and

the means for determining characteristics includes a means for ~~computing configured to calculate a power spectrum of the cantilever based on the deflection of the cantilever while oscillating and to calculate determining~~ a spring constant based at least in part on the ~~a~~ power spectrum associated with the cantilever.

19. (Currently Amended) The apparatus ~~as claimed in~~ of claim 18, further comprising: wherein the means for monitoring the deflection includes means for determining a hysteresis of deflection of the cantilever and for monitoring the hysteresis; and

the means for ~~computing determining characteristics~~ is further configured to ~~compute determine~~ a distance between the cantilever tip and the surface based at least in part on the hysteresis.

20. (New) The apparatus of claim 16, wherein the means for determining the fluid flow rate is configured to determine the fluid flow rate based at least in part on a spring constant and dampening constant of the cantilever.

21. (New) The apparatus of claim 20, including means for oscillating the cantilever; wherein:

the means for monitoring the deflection is configured to monitor the deflection of the cantilever while oscillating;

the means for determining characteristics is configured to determine a hysteresis of the deflection of the cantilever as a function of position of the base of the cantilever.

22. (New) The apparatus of claim 15, wherein the means for monitoring the deflection is configured to determine a hysteresis of deflection of the cantilever and to monitor the hysteresis; and

the means for determining characteristics is configured to determine a distance between the cantilever tip and the surface.

23. (New) The apparatus of claim 15, wherein the means for monitoring the deflection is configured to determine a hysteresis of deflection of the cantilever and to monitor the hysteresis; and

the means for determining characteristics is configured to determine dissipation between the cantilever tip and the surface in accordance with the hysteresis of deflection of the cantilever.

24. (New) The method of claim 13, wherein the monitoring the deflection further includes determining a hysteresis of deflection of the cantilever and monitoring the hysteresis; and

the determining characteristics includes determining dissipation between the cantilever tip and the surface in accordance with the hysteresis of deflection of the cantilever.